

ENTOMOLOGY.—*Venomous moths and butterflies.* HOWARD F. ALLARD and HARRY A. ALLARD, Tingo María, Peru.

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LARVAE WITH VENOMOUS HAIRS OR SETAE

The larvae of a number of species of moths and butterflies are known to bear venomous hairs or setae. The following may be mentioned:

Lagoa rispata (fam. Megalopygidae). This is a common eastern species, the caterpillars feeding upon the leaves of oak, elm, apple, raspberry, and various shrubs. These are fleshy and furnished with a dense coat of long, silky, brown hairs which project upward and meet to form a ridge or crest along the median dorsal line. Among these fine hairs venomous setae occur.

Sabine stimulea (fam. Limacodidae, by some authors termed the Cochlidiidae and by others the Eucleidae). These are known as the slug-caterpillar moths. *Sabine stimulea* is the saddle-back caterpillar, feeding on oaks and other forest trees. The larva is characterized by a green patch on the back resembling a saddlecloth, the saddle being represented by an oval purplish brown spot. The moth is dark reddish brown in color with two white dots near the apex of the fore wings.

The spiny oak slug (*Euclea delphinii*) is another common species feeding on oak, pear, willow, and other trees.

Automeris io (fam. Saturniidae) (Giant silkworms). This is called the io-moth and is a common species in the eastern part of the United States. It is characterized by large conspicuous eye spots on the hind wings. The larvae, armed with particularly venomous spines arranged in tufts, are green, with a broad brown or reddish-white edged stripe on either side of the abdomen, and the spines are tipped with black. This is a common species, and the junior author, in his boyhood, was well acquainted with this caterpillar and often deliberately touched the spines of the caterpillars against the tender skin of the arms or fingers to note the venomous reactions. Frequently, too, he sometimes inadvertently came in contact with them, usually while

cutting or shocking corn, and was at once made aware of their presence by a burning sensation followed by more or less temporary redness or swelling.

The maia-moth, *Hemileuca maia*, is also a member of the same family Saturniidae. It is the only species of the genus in the eastern United States and is not particularly common. The larvae feed upon the leaves of the oak, are brownish black with a lateral yellow stripe, and each segment is armed with large, branching, venomous spines.

Browntail moth, *Euproctis chrysorrhoea* (fam. Lymantriidae, or Lipariidae). The tussock moths. This is a European pest introduced first into Massachusetts at some unknown date, but in 1897 its ravages came to notice, and the species since has spread over much of New England, and into Nova Scotia, New Brunswick, and other areas. The larvae are more or less social in behavior, fastening leaves together with silk as shelters in which they pass the winter. They are nearly black in general coloration, and are clothed with brownish, barbed hairs, borne on the subdorsal and lateral tubercles. These hairs are venomous and in contact with the human skin, produce an inflammation similar to that of poison ivy. Even the cast spines of the larvae are readily blown about by the wind, the venomous hairs causing much discomfort.

ADULT INSECTS WITH VENOMOUS HAIRS OR SETAE

It is perhaps less generally known that the hairs or setae of the adult moths and butterflies, in some parts of the world, may also produce great discomfort, as troublesome irritations or inflammation in contact with the skin of tender areas of the human body. In this country the hairs of the adult insects of the browntail moth are known to be of this character.

In some parts of the world, especially in

the warmer regions of South America, the presence of moths with venomous hairs may at times constitute a serious health problem.

The following observations and account of the senior author, living at Tingo María, Peru, in the province of Huanaco, on the east slope of the Andes, in the tropical rain-forest, may be of some interest to entomologists and to the medical fraternity as well.

In the Tingo María area, in 1952, during the latter part of April and the month of May, near the close of the season of heavy rains, great numbers of small, dusty black moths made their appearance, congregating about electric lights along the streets of Tingo María, and around those over the entrance of houses. In unscreened houses where lights were present these moths were attracted in numbers. These moths at Tingo María appear at about the same season every year, and in 1952, they became exceptionally numerous, together with a number of other species, but the dusty black species were dominant, appearing in enormous numbers. It was soon obvious that the irritations which soon developed were associated with this moth. Simultaneously with these hordes many people experienced a troublesome rash. Spotted red areas or small pimples or streaks developed on the inner angle of the forearm. Irritations also appeared on the neck or on other tender parts of the body. So general was the affliction that affected individuals visited the hospital at Tingo María, thinking they were affected with some new, strange tropical disease. It is estimated that 70-80 per cent of the population was affected, perhaps as many as several thousand people.

The senior writer suspected that the hairs of this ubiquitous moth were responsible for this rash and carried out a few tests which definitely proved that his surmise was correct. He caught several of the moths and gently rubbed them up and down the inner part of his own forearm and also made similar tests upon several Peruvian technicians at the Experimental Station who had not previously experienced the prevailing rash. In about 15-20 minutes all who had submitted to the test had broken out with a red, itching rash in the treated areas. Both the senior writer's garage and house at

Tingo María were equipped with an electric light over the entrance doors. Every night hundreds of these moths were attracted to these lights.

This moth has an interesting behavior by playing possum when touched, at once lifting and closing its wings in an upright position over the body, then usually relaxing its hold upon the object to which it is clinging and simply falling to the ground as if helpless or dead. In a few seconds or a minute it appears to revive and crawl or fly away.

Although the great swarm of these moths appear in April and May, a few belated individuals may be seen in June, but very few in numbers in comparison with the great initial invasion.

The day following their nightly appearance, they remain around the light which attracted them, but many fall to the ground and appear to die and are carried away or eaten by ants. Their constant fluttering about the lights scatters great quantities of the hairlike fuzz dislodged from their bodies, and this forms a dense covering on all objects below or near the lights, and is blown about. This at once explained the occurrence of the rash each time the senior author worked in his workshop in the garage, whenever he paused and rested his forearm on the work bench. On these occasions, always in a short time, the rash made its appearance, and the itching continued for several hours or more. At the height of the invasion of these moths, people were being constantly re-exposed each night so that the rash was aggravated into an almost chronic and distressing condition to be endured for several weeks.

Specimens of this moth, collected by the authors, have been kindly identified by William D. Field, associate curator of insects, U. S. National Museum, as a species of *Hylesia* close to *Hylesia volver* Dyar, of the lepidopterous subfamily Hemileucinae, family Saturniidae. According to Mr. Field this troublesome genus presents great taxonomic difficulties so that the Tingo María species cannot at present be more definitely named, than a species near *Hylesia volver* Dyar. Mr. Field has been of much assistance in the preparation of relevant litera-

ture discussing the moths of the genus *Hylesia*, and the skin irritations which they induce.

TESTS OF THE JUNIOR AUTHOR

Early in July the senior writer (my son) sent me six or seven dried specimens of this moth, and I made the following tests. I carefully rubbed the abdominal portion of a dry moth, bearing a coat of velvety dark hairs, on the skin of the bend of my forearm at or little below the elbow. This was done at 2 p.m. July 17. There was no noticeable immediate effect, but in about two hours, the area showed a noticeable redness and by nightfall the skin was hot and fiery red with a pronounced puffiness resembling weals, and itching had become intense. This discomfort persisted throughout the night. Even at nightfall of the next night, July 18, the redness, puffiness, and itching were very pronounced. By nightfall of July 19, a marked fiery redness was still evident, and tiny pimplelike blisters had appeared, with blood-red dots as if a slight haemorrhage had taken place at many pin-point spots. There was marked hyperaemia in the area, and the affected skin seemed hot and feverish, and appeared to perspire more freely than unaffected areas.

I purposely avoided any palliative treatment or medication with alcohol or other reagents, as I wished to learn how persistent this trouble would be. There was still some redness of my forearm on July 22, but there was now little swelling, and with only occasional periods of itching, and this became most noticeable only following work or exercise during periods of hot weather. By July 24, all irritating symptoms resulting from the test had completely subsided. The irritations induced had therefore lasted almost one week, or at least for six days, although some redness remained for a few days longer.

In the literature there are a number of reports of skin irritations produced by species of moths of the genus *Hylesia*.

In the Lima newspaper *La Cronica*, May 12, 1952, the following translated account appeared.

Montevideo, 12 (U/P/).—The crew of the Italian oil-tanker *Unitas* who were detained in

quarantine some days after arriving from Caritpito, Venezuela, due to a fear of an epidemic of a dangerous tropical disease, stated that while taking on oil in Venezuela, actual clouds of yellow-tailed butterflies alighted on the hands, faces and other exposed parts of the officers and sailors, which they crushed with their hands or other objects. A few hours before the ship weighed anchor, the crew showed symptoms of a curious disease. The skin was irritated first, followed later by a painful inflammation. The captain, Romulo Ballestrino, radioed the Institute of Tropical Diseases in Rome, where a correct diagnosis was made and an efficient remedy prescribed.

If this account is correct in all its features, it is evident that even certain swallowtail butterflies of the genus *Papilio* may cause troublesome skin inflammations similar to that caused by the moths of the genus *Hylesia*, but this needs further confirmation. Little work appears to have been done to determine the exact nature of the skin irritations produced by the hairy covering of the moths of the genus *Hylesia*.

Mr. Leger and P. Mouzels (see reference 4) appear to have made a more than cursory study of the character of the irritations produced.

They examined microscopically the individual hairs or setae of the body covering of the moths of *Hylesia*, a species appearing at Cayenne in French Guiana in July and August at the close of the rainy season, causing skin eruptions, watery blisters and inflammation, especially in young children. The natives are familiar with its cause, ascribing it to *Mauvais papillons*. The trouble occurs only during a short period when certain moths of the genus *Hylesia* appear, and usually persists for only about eight days. They examined microscopically the hairs and setae of the body covering of these moths and found three sorts. Most of these were 140–150 microns long with the largest diameter of 3 microns. These apically were sharp-pointed, and some were furnished with downwardly directed barbs. Others were larger, up to 300 microns long, and less sharply pointed. Some are lance-shaped, shaped something like a knife. Some are plates 2 microns thick with a length 120–150 microns.

Leger and Mouzels very convincingly proved that the irritations produced by the

hairs of these moths were not of merely mechanical origin. After macerating the moths, some in alcohol, and some in water, these two solutions were centrifuged to eliminate all scales and hairs. The solutions were now separately tested on the tender skin. The alcohol solution was absolutely without effect. The water solution, after 4 hours, produced the typical characteristic irritations of *Hylesia*, which persisted for four to five days. This simple test indicated an irritating principle of chemical origin, comparable, it would appear, to the contact poisons of the sap of certain plants (*Rhus*).

In the June 1952 issue of the publication *The Lamp* (7), there appeared a most interesting account of insufferable irritations that workers on oil tankers visiting northern South America have experienced following visitations of the moths *Hylesia*. An artist's concept of swarms of these moths visiting one of these tankers attracted by the lights on board, is presented in an illustration. This is a most readable and popular account of the annoyances swarms of these venomous moths sometimes inflict upon the crews with their venomous hairs.

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THE STATUE OF NEWTON AT CAMBRIDGE

*Newton with his prism and silent face,
The marble index of a mind for ever
Voyaging through strange seas of Thought, alone.*

—WORDSWORTH.